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AUTHOR Morrow, Robert D.; McBride, Hugh J.
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ABSTRACT

This article discusses the assessment of language and cognitive development as reflected in preschool activities and describes the Preschool Language-Cognitive Assessment for Curriculum Entry (PLACE). Five task-skill areas associated with common preschool activities (building with blocks, completing puzzles, pounding pegs, etc) are identified. How these skills can be assessed, and the relationship of the skills to critical higher level skills in the areas of reading and mathematics are discussed briefly. The skill areas covered are size and shape discriminations; object permanence; language ability as related to mental manipulation of symbols; the concept of equivalence; and the concept of oneness. (SB)

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RELATIONSHIP OF PRESCHOOL ACADEMIC SKILL DEFICITS TO SUBSEQUENT ACQUISITION OF READING AND MATHEMATIC SKILLS

by

Robert D. Morrow, Ed.D.
Early Childhood Education
University of the Pacific

and

Hugh J. McBride, Ph. D.
Special Education
University of the Pacific
Stockton, CA 95211

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In a recent issue of a leading education journal a delightful cartoon depicts two toddlers pausing from their busy play, amidst blocks, pounding boards and other preschool toys that are strewn about the floor around them. In the cartoon, one of the youngsters is saying ruefully, to the other, "Blocks, beads, pegboards -- they're filling my head with stuff I'll never use!"

Historically, many instructional programs for preschool children have been, and, in many instances, still remain, activity-oriented rather than

assessment-based. "Activities" refers to not only blocks, beads and pegboards, but such things as "show and tell", story time, singing, outdoor play, quiet time, art, and field trips. This type of program can be seen in centers across the nation.

In some centers for young children, one observes training or instruction in language, socialization skills, gross motor skills, and academics, such as reading and arithmetic. While observing this instruction, however, one is immediately aware that most children are doing, or attempting to, or are expected to, accomplish the same task. The assumption with this instructional format as with the previously cited activities is that all the children are at the same general level of functioning.

Methods courses in teachers' colleges and in-service workshops for practitioners provide information and on occasion even "hands on" experiences with activities to teach such skills as sorting, matching, classification, labeling, throwing, tying, buttoning, but seldom if ever, provide information on assessment devices or training in assessment so as to allow the teacher to determine at what level to begin teaching.

Teachers consistently say to us, "No. We don't have time for assessment, we have to get on with teaching." Undoubtedly their time is limited. But could it be that their resistance has a variety of sources:

1. Pre-school teachers don't have available to them assessment devices which have been developed in such a way that they are easily administered and scored and which reveal skill assets and deficits directly related to language and cognitive skills.

2. Teachers don't have training in the administration of the assessment devices or in instructional techniques specific to deficits found on the assessments, or in techniques for working with individual children in a group session.
3. Teachers don't have available, information specific to instruction on the goals established by the previously mentioned assessment.
4. The relationship between skill assessment, skill deficits, and implications for later learning, is obscure and therefore often not addressed in the flurry of everyday activities.

Despite the resistance, assessment even in pre-school programs is essential so as to prevent the young child with special needs from "slipping through the cracks" of the educational matrix.

Early assessment and early intervention are crucial to this kind of preventive mainstreaming. Lest the readers become anxious regarding the use of the term "assessment", in this context we are using it to mean determining in a systematic and developmental way what a child can do independently. To be instructionally effective an assessment device must be developmentally sequenced and address through it's tasks, or items, those cognitive and language skills prerequiste to later skill acquisition.

In this article we will address ourselves to Language and Cognitive development as they are found in preschool activities and are reflected on the Preschool Language-Cognitive Assessment for Curriculum Entry (PLACE). (McBride and Morrow, 1977).

Therefore, the authors' purpose is to focus on the importance of systematic skill assessment during the block-playing, peg-pounding, sorting by size, etc., and the "stuff" of teaching preschool children as these activities help develop specific language and cognitive skills. Currently, this relationship is obscured by the activity-oriented nature of most programs for young children.

The building of block towers, putting of pegs into peg boards and all the other "stuff" of preschool programs can be justified as being educationally sound and having academic integrity when the teachers are aware of the relationship.

The secondary focus of the article is the identification of specific skills associated with common activities, how these skills can be assessed, and their relationship to critical higher level skills in the areas of reading and mathematics.

An example of the link between a preschool task and higher level skills might be found in the child who is unable to match forms in a form board, who may at a later time have difficulty with higher level discrimination skills which are prerequisite to seeing the difference in amounts, lengths, sizes, and letters.

The assessment tool (PLACE) which the authors have developed is one which was derived from a variety of standardized assessment instruments generally used throughout the country with young children. The items on the instrument are developmentally-sequenced and were chosen because of the skills which they tap. The assessment tasks are, of themselves, irrelevant. However, the skills, as represented by the tasks, are of critical importance as they serve as the foundation for later learning.

In assessment, the authors use a variety of objects commonly found in any classroom for young children. It is not necessary to use expensive and highly complicated, standardized assessment instruments in order to effectively determine where a child is functioning along the continuum of a partial skill.

Space does not permit the elaboration of the relationship of all preschool tasks and activities with subsequent skill development. The following section is an attempt to describe in some detail this relationship as it applies to five task-skill areas.

1. Assessment Task:

   Child must correctly place three forms (circle, square and triangle in a three hole formboard.)

   Assessment Skill:

   At this level the child is beginning to form conceptual thought and can discriminate shape and size. This skill is prerequisite to higher level skills which allow the child to discriminate amounts (quantity).

   Mathematical Implications:

   The formboard serves as an example of physical experience. But, another type of experience--logical-mathematical experience--could also be derived from actions with the objects. For example, suppose the child when given a set of objects ordered them from left to right and then counted them.

   Piaget (1966) proposes a two-level development of spatial ideas, these being perception and representative.

Perception deals with sensory space (vision, grasping, hearing, etc.) while representation is the reconstruction of sensory space at the level of abstract thought.

Reading Implications:

The child who does not have this pre-classification skill will have difficulties in discriminating amounts which will later be reflected in other activities such as telling time, making change, and matching the label (numeral) with the quantity (number).

2. Assessment Task:

Child can correctly find an object hidden under one of three cups.

Assessment Skill:

Child's object permanence is fully developed at this stage (child can retain menral images or recall where an object is hidden.) This is the beginning of conservation skills which later becomes the basis for for a child's being able to conserve volume, length, and quantity in memory based on ability to visualize the abstract.

Mathematical Implications:

After the child has accomplished matching and verbal counting, it is necessary to have a deeper understanding of these relationships. An example of deeper understanding would be a child refusing to alter his

judgment concerning comparisons between two sets after a rearrangement or transformation of the sets. Here, the child will not give in to demands made by the perceptual situation. For example, having established collection "A" to have less than collection "B", the child will not alter his judgment when collection "A" is spaced so as to be a longer line than "B".

0 0 0 0 0 0

0 0 0 0

Counting by ones is not the most fundamental number skill children should be able to perform. Prior to counting by ones the child should be able to compare sets of objects by using the relations of matching ("As many as", "Fewer than", and "More than".) For example, given a specific collection of objects, one more object, or one fewer object than the given collection. The child can accomplish these tasks by using one-to-one correspondence rather than counting.

Reading Implications:

Relates to visualizing sequences (happenings) in understanding reading (comprehension).

Explanation of the Deficit:

A child who can not conserve may fail to see the constancy of amount even though the physical arrangement changes. The child needs to be able to see that the

number stays the same.

In reading this relates to child's ability to decipher the main idea while holding the relationship of the parts (supporting details) to the whole (main idea).

3. Assessment Task:

Child is presented with several common objects, and asked, "Show me the one you use on your hair.", etc.

Assessment Skill:

This task illustrates the importance of language development on such mathematical skills as problem solving which requires the child to mentally manipulate symbols in order to solve problems.

Mathematical Implications:

This type of manipulation with objects, forms the necessary foundations for the future development of deductive thought. ~~Mental operations, which are part of the deductive thought.~~ Mental operations, which are part of the deductive process, are themselves derived from actions. Once these are internalized, concrete operations are no longer necessary. Mathematics learning involves a set of actions exercised on things. For learning, the operations of mathematics can be viewed as actions. They are however well coordinated among themselves and are only imagined rather than being carried out physically. Failures in formal mathematics education are sometimes

due to the fact (that instruction begins with language rather than actions.) Schooling in mathematics should begin in nursery school with exercises related to numbers, lengths, and surfaces.

Reading Implication:

Pragmatic philosophy concept and psychology of learning through doing. Concrete visual imagry exposure is also important in reading. An example of this is that visual recognition of number paralells the visual recognition of letters. Understanding of lengths and surfaces is important in adding letters together to form various patterns.

S
ST
STR

Explanation of Skill Deficit:

The major implication in this deficit is that child will have difficulty in mathematical problem-solving and reading.

4. Assessment Task:

Child is presented with sets of different sizes of objects and asked to match them with like-sized objects. Subsequently the child is presented with sets of colored blocks and asked to match with like colored ones.

Assessment Skill:

Recognition of identical objects with the same attribute

(color or size).

Math Implication:

With this skill, the child is able to internalize the concept of equivalence which is the capacity to make simple comparisons of shape, lengths, quantity or color.

6 = six

3 + = 4 + 1

3 =

Equivalence of number is a form of conservation and requires the child to have the ability to see one-to-one correspondence. The child in the 2nd or 3rd grade is required to conserve numbers by mentally placing one number opposite another, instead of physically placing them together. This is the prerequisite to a child's being able to see the equivalence of sets -- a higher form of conservation.

Reading Implication:

Again some visual discrimination is needed for letter identification before the sound -- symbol process begins. Example of this is the uncanny similarities between the numbers 6 and 9 and the letters b p d g.

Skill Deficit:

Child is unable to develop the concept of equivalence, a high level of conservation, nor will he be able to recognize letters or numbers, prerequisite skills to reading.

5. Assessment Task:

Upon request, child must be able to select and hand the teacher one block from a group of blocks.

Assessment Skill:

Understanding concept of oneness when a child understands this concept he is in the beginning stages of developing number concepts. The child who does not have this concept (oneness) will otherwise have no meaningful counting skills, (i.e., counting by twos, threes, etc.). These skills are also prerequisite to such later skills as telling time, counting money.

Mathematic Implication:

When children are capable of acting on the use of spoken number names in a meaningful way, the reading and writing of numerals can be introduced. The use of the verbal names for sets of objects, such as "one", "two", etc., are the child's first counting experiences.

Skill Deficit:

Child is unable to carry out meaningful counting activities (tell time, make change, etc.).

SUMMARY

To recap, the purpose of this article was to provide an analysis of assessment techniques by identifying the skills associated with such common tasks as building with blocks, completing puzzles, putting pegs in a pegboard and other activities in classrooms for young children. Also,

the authors attempted to focus on the delicate link between assessment, prescription and instruction.

Too often, after we have discovered that the young child has a particular skill deficit, we, as teachers of these children set about having the child practice and practice without effectively assessing the nature of the deficit causing the problem. Practice does not make perfect. Skill attainment requires that the components of a skill be task analyzed and subsequently taught in such a way that each step in the process is built on the acquisition of the preceeding step.

Thus, our belief is that through the approach described in this article, that we as teachers, can in fact ensure that the young children in our charge do not become the reading and mathematic failures of the future.

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